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A Comparative Study on Risk and Return of NSE Sectoral Indices with NIFTY 50 As Benchmark

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Abstract- ***This study examines the comparative performance of major NSE sectoral indices with reference to the NIFTY 50 benchmark. The objective is to analyze sector-specific risk-return dynamics, measure volatility, and evaluate risk-adjusted performance through ratios such as Sharpe, Sortino, and CAPM-based beta and alpha. The study also incorporates tracking error, information ratio, and correlation matrices to assess diversification benefits. Results reveal that sectoral indices behave differently across economic cycles, with defensive sectors such as FMCG and Pharma showing resilience, while cyclical sectors like Auto and Metal exhibit high volatility but potentially higher returns during expansions. The findings contribute to investor decision-making, portfolio diversification, and strategic allocation.***

Index Terms- ***NIFTY 50, NSE Sectoral Indices, Risk-Return Analysis, Sharpe Ratio, CAPM, Portfolio Diversification***

I. INTRODUCTION

The Indian equity market has evolved into a dynamic platform that channels household and institutional savings into productive investments. The National Stock Exchange (NSE), established in 1992, modernized stock trading through screen-based systems and transparent practices. Its flagship index, the NIFTY 50, launched in 1996, is widely regarded as a benchmark of corporate performance and a barometer of the economy. In addition to NIFTY 50, NSE introduced sectoral indices such as NIFTY Bank, IT, FMCG, Pharma, Auto, Metal, and Realty, which provide industry-specific insights. These indices are essential for thematic investment strategies, diversification, and understanding sector-specific risk-return dynamics.

II. LITERATURE REVIEW

Sharpe (1966) introduced the Sharpe ratio as a measure of risk-adjusted performance, while Lintner (1965) and Jensen (1972) extended the Capital Asset Pricing Model (CAPM) to analyze systematic risk. Elton and Gruber (1991) emphasized diversification benefits, whereas Fama and French (1993) highlighted factor exposures beyond market beta. Chaudhuri (2002) and Bhattacharya & Banerjee (2005) studied Indian sectors, classifying them into defensive and cyclical categories. More recent research, including Mukherjee (2020) and RBI Bulletins (2023), emphasized sector resilience during shocks such as COVID-19. Collectively, these studies underscore the importance of examining sectoral indices against benchmarks to uncover risk-return trade-offs, diversification potential, and alpha generation opportunities.

III. RESEARCH METHODOLOGY

This study adopts a descriptive and analytical research design to evaluate NSE sectoral indices against the NIFTY 50 benchmark. Monthly returns were calculated from closing prices between January 2015 and July 2025. The risk-free proxy was the Indian Treasury Bill yield. Performance metrics included CAGR, volatility, Sharpe ratio, Sortino ratio, maximum drawdown, CAPM beta and alpha, tracking error, and information ratio. Statistical tests such as t-tests and correlation analysis were conducted to validate findings. Excel and Python were used for computation and visualization.

IV. DATA ANALYSIS AND DISCUSSION

The study relies entirely on secondary data obtained from the NSE official website, RBI bulletins, SEBI reports, and IMF publications. Indices covered include

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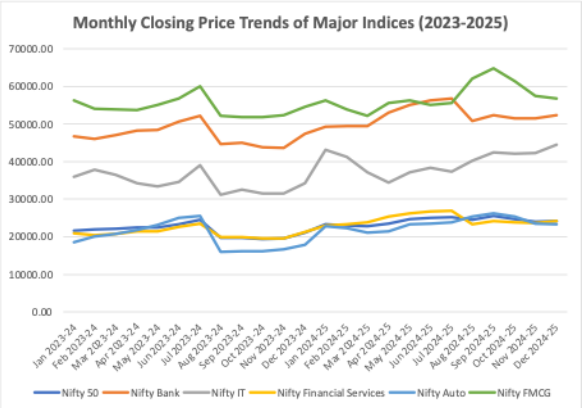
NIFTY 50, Bank, IT, FMCG, Pharma, Auto, Metal, Realty, PSU Bank, and Energy. Monthly observations were chosen to capture medium-term patterns while avoiding daily fluctuations.

1. Closing Price Trend Analysis

The following analysis details monthly average closing price trends for the five major indices: Nifty 50, Nifty Bank, Nifty IT, Nifty Financial Services, Nifty Auto and Nifty FMCG.

Months	Nifty 50	Nifty Bank	Nifty IT	Nifty Financial Services	Nifty Auto	Nifty FMCG
Jan 23-24	21631.89	46765.86	35952.30	20896.48	18602.45	56294.12
Feb 23-24	21947.28	46127.01	37806.88	20427.03	20040.08	54108.13
Mar 23-24	22187.31	47038.38	36519.73	20795.36	20822.03	53814.62
Apr 23-24	22443.46	48183.40	34280.79	21398.79	21834.67	53798.07
May 23-24	22485.23	48364.57	33343.34	21540.63	23101.00	55058.93
Jun 23-24	23364.04	50679.28	34649.45	22587.18	24994.79	56807.83
Jul 23-24	24495.15	52140.36	38971.65	23539.87	25549.40	60091.21
Aug 23-24	19680.57	44746.18	31229.72	19946.35	15937.36	52229.15
Sep 23-24	19786.05	45033.94	32570.55	20003.01	16170.46	51822.22
Oct 23-24	19481.67	43775.99	31541.11	19586.45	16185.37	51771.59
Nov 23-24	19599.17	43732.89	31539.76	19588.51	16619.75	52303.04
Dec 23-24	21165.99	47394.97	34294.88	21214.83	17900.99	54663.57
Jan 24-25	23366.40	49295.33	43078.15	22970.05	22848.79	56238.14
Feb 24-25	23060.94	49383.17	41233.77	23281.36	22358.04	53948.85
Mar 24-25	22851.54	49465.93	37129.56	23883.41	21118.56	52245.35
Apr 24-25	23531.66	53093.42	34379.25	25419.37	21383.98	55562.51
May 24-25	24676.44	55050.66	37137.91	26282.64	23321.88	56368.60
Jun 24-25	25003.40	56261.03	38317.36	26669.00	23558.46	55105.56
Jul 24-25	25164.89	56799.94	37352.25	26872.32	23873.41	55538.48
Aug 24-25	24610.90	50892.59	40263.25	23264.85	25404.02	62118.27
Sep 24-25	25470.09	52427.44	42492.99	24220.08	26184.61	64856.65
Oct 24-25	24781.67	51544.87	42087.55	23810.94	25301.82	61409.98
Nov 24-25	23969.85	51439.78	42282.10	23755.06	23468.72	57547.81
Dec 24-25	24231.02	52385.61	44541.18	24261.35	23351.48	56718.36

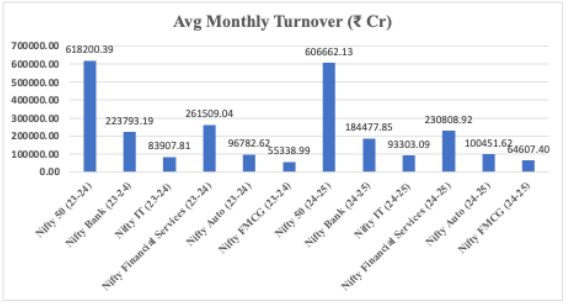


Over the past two years, Indian equity markets experienced alternating phases of growth and correction. In both years, indices recorded strong performance in the first half, largely supported by robust corporate earnings, favorable domestic economic data, and steady inflows from local investors.

However, corrections emerged in late 2023 and again in mid to late 2024, primarily triggered by global shocks such as rising interest rates, concerns over economic slowdown, and geopolitical tensions that dampened investor sentiment.

During this volatility, Nifty FMCG stood out with consistent performance, reflecting the defensive strength of consumer goods, which continued to see demand even during uncertain market conditions. By the end of 2024–25, most indices rebounded, supported by easing inflation, effective policy measures, and stronger corporate results, which together helped restore market confidence.

2. Turnover and Liquidity Analysis



In 2023–24, the Indian stock market saw high levels of volatility across most indices. Nifty Auto was the most unstable with fluctuations of 42.86%, followed by Nifty IT at 28.67% and Nifty 50 at 23.28%, while Nifty Bank and Financial Services also showed considerable swings in the range of 18–20%.

However, in 2024–25, market volatility reduced significantly across sectors. For instance, Nifty 50 dropped from 23.28% to just 8.86%, and Nifty Auto declined from 42.86% to 16.03%. Similar trends were seen in IT, Bank, and Financial Services, which also recorded sharp falls in volatility. The only exception was Nifty FMCG, which stayed steady across both years, reflecting its stable and defensive nature.

3. Turnover and Liquidity Analysis

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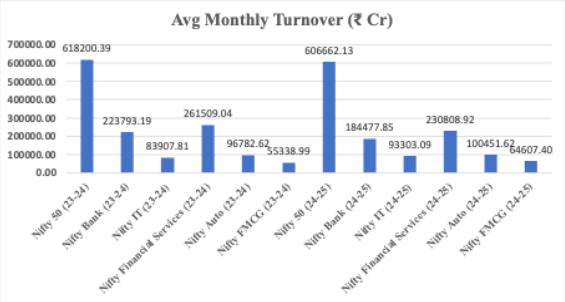


Nifty 50 recorded the highest average daily turnover in both years, crossing ₹6 lakh crore, which made it the most actively traded index in the country. Nifty Financial Services and Nifty Bank also reported strong turnover levels, highlighting high investor and trader participation in these sectors.

On the other hand, Nifty IT, Auto, and FMCG saw much lower turnover, reflecting relatively lower liquidity and less frequent trading activity.

In 2024–25, trading volumes for sectors such as Bank, IT, and Financial Services declined slightly compared to 2023–24, suggesting a dip in overall activity. FMCG consistently had the lowest turnover among the major indices across both years, reinforcing its position as a relatively less traded but stable sector.

4. Correlation Between Indices

Year 2023-24	Nifty 50	Nifty Bank	Nifty IT	Nifty Financial	Nifty Auto	Nifty FMCG
Nifty 50	1.00	0.96	0.80	0.94	0.97	0.89
Nifty Bank	0.96	1.00	0.68	1.00	0.94	0.91
Nifty IT	0.80	0.68	1.00	0.66	0.66	0.76
Nifty Financial	0.94	1.00	0.66	1.00	0.92	0.93
Nifty Auto	0.97	0.94	0.66	0.92	1.00	0.82
Nifty FMCG	0.89	0.91	0.76	0.93	0.82	1.00

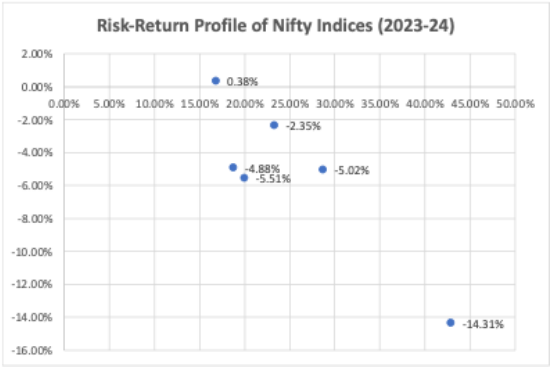
Year 2024-25	Nifty 50	Nifty Bank	Nifty IT	Nifty Financial	Nifty Auto	Nifty FMCG
Nifty 50	1.00	0.71	0.08	0.50	0.82	0.65
Nifty Bank	0.71	1.00	-0.44	0.96	0.19	-0.02
Nifty IT	0.08	-0.44	1.00	-0.63	0.48	0.44
Nifty Financial	0.50	0.96	-0.63	1.00	-0.07	-0.26
Nifty Auto	0.82	0.19	0.48	-0.07	1.00	0.91
Nifty FMCG	0.65	-0.02	0.44	-0.26	0.91	1.00

Almost all the major sector indices, including Nifty 50, Bank, IT, Financial Services, Auto, and FMCG, showed very high correlation, with most values above 0.8.

The strongest connections were seen between Nifty 50, Bank, Financial Services, and Auto, indicating that they moved almost in sync. Even traditionally defensive sectors like FMCG and IT, which usually behave differently, closely followed the broader market trend.

This pattern suggests that when one sector moved up or down, others tended to move in the same direction, leaving investors with very limited opportunities for true diversification.

5. Comparative Summary: Risk-Return Profile



V. FINDINGS

The analysis revealed that sectoral indices displayed heterogeneous risk-return profiles. FMCG and Pharma emerged as defensive sectors with lower volatility, while Auto and Metal showed cyclical patterns with higher volatility but stronger returns during expansionary phases. IT and Energy were influenced by global demand and currency fluctuations, whereas Banking and Financial indices were highly sensitive to interest rate cycles. Correlation analysis confirmed that diversification opportunities exist, as inter-sector correlations were less than perfect. Sharpe and Sortino ratios indicated that defensive sectors consistently provided better risk-adjusted returns compared to cyclical sectors.

VI. SUGGESTIONS

- Investors should adopt a blended strategy, combining defensive and cyclical sectors to balance stability with growth.

- Policymakers should promote sector-specific ETFs and index funds to improve market access and diversification opportunities.
- Fund managers can employ sector rotation strategies based on macroeconomic signals to enhance alpha generation.
- Further research could extend this analysis to thematic indices and integrate global linkages for a broader perspective.

CONCLUSION

The study concludes that sectoral indices behave differently across economic cycles and contribute uniquely to portfolio construction. While the NIFTY 50 provides a broad market view, sectoral indices offer deeper insights into industry-specific risks and opportunities. Defensive sectors are crucial for stability, whereas cyclical sectors enhance growth during favorable conditions. These findings support benchmark-aware allocation strategies for investors and policymakers.

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